

FIGURE 10.—Potentiometric-surface map of the upper part of the High Plains aquifer system.

SUMMARY

Near Cheyenne, the High Plains aquifer is considered an aquifer system because the system consists of several distinctive water-bearing units that are in the Ogallala Formation and overlying surficial deposits. Contrasting with nearby regions where the Ogallala Formation is mainly of sandstone, the Ogallala near Cheyenne consists of thin sandstone and conglomerate beds enclosed in clay and silt sequences. These lithologies affect the distribution and movement of water in the upper part of the aquifer system. The principal surficial deposits are alluvial and terrace deposits that extend over much of the metropolitan area. Much of the water in the upper part of the aquifer system generally moves at shallow depths toward and discharges principally to Crow and Dry Creeks. Water at shallow depths occurs throughout much of the city and has caused problems such as seepage into basements and along footings for buildings. Distribution of the shallow water is shown by a potentiometric-surface map. Locally, perched water occurs above the level of the mapped potentiometric surface. Water in the upper part of the aquifer system generally is unconfined or under water-table conditions, whereas water in the lower part of the aquifer system is confined by extensive clay and silt beds of the Ogallala Formation and is under artesian conditions. In places, a few wells flow at the land surface.

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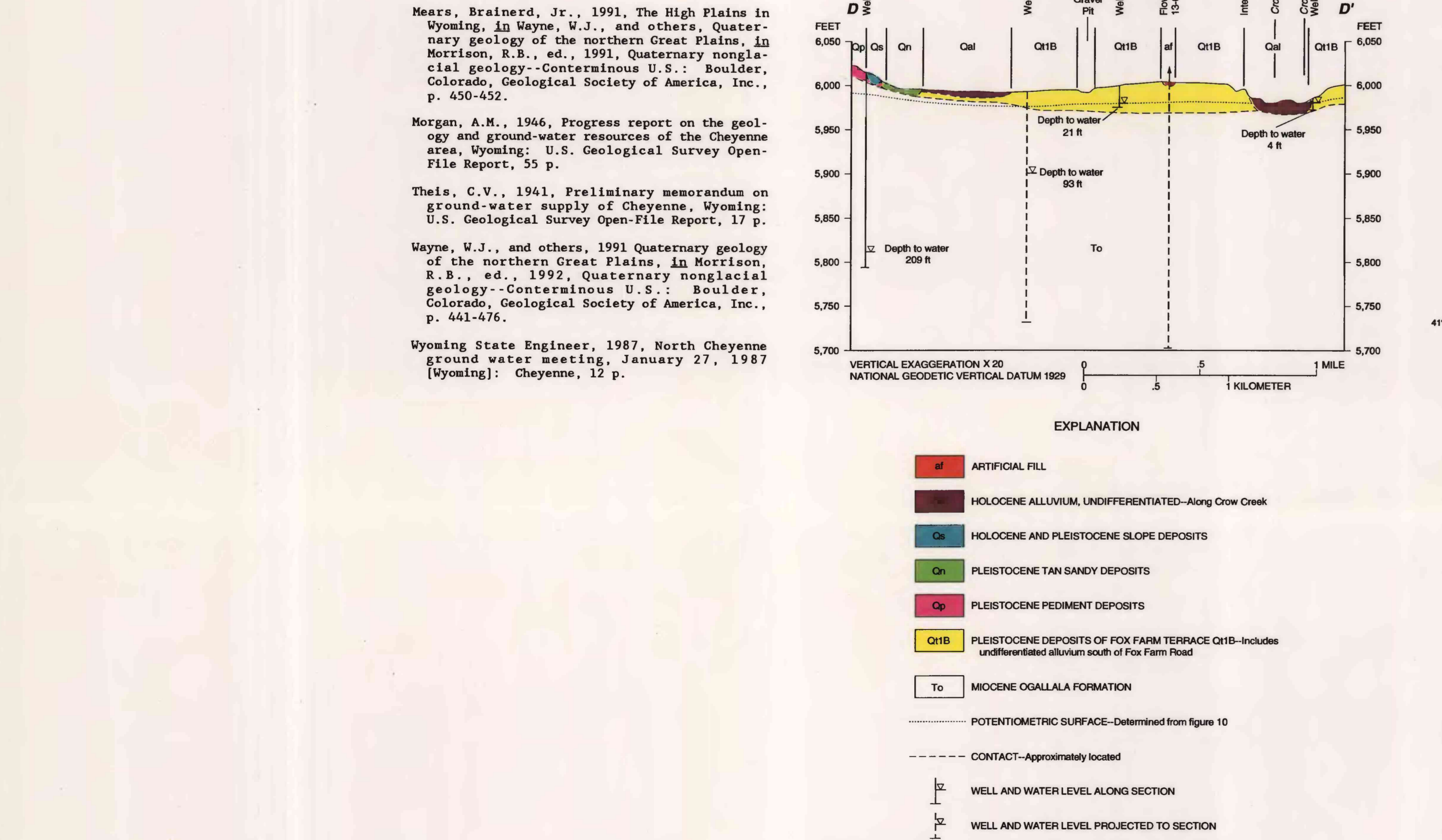


FIGURE 11.—Geohydrologic section near Fox Farm Road showing the potentiometric surface in the upper part of the High Plains aquifer system and water levels in wells completed in the lower part of the aquifer system.

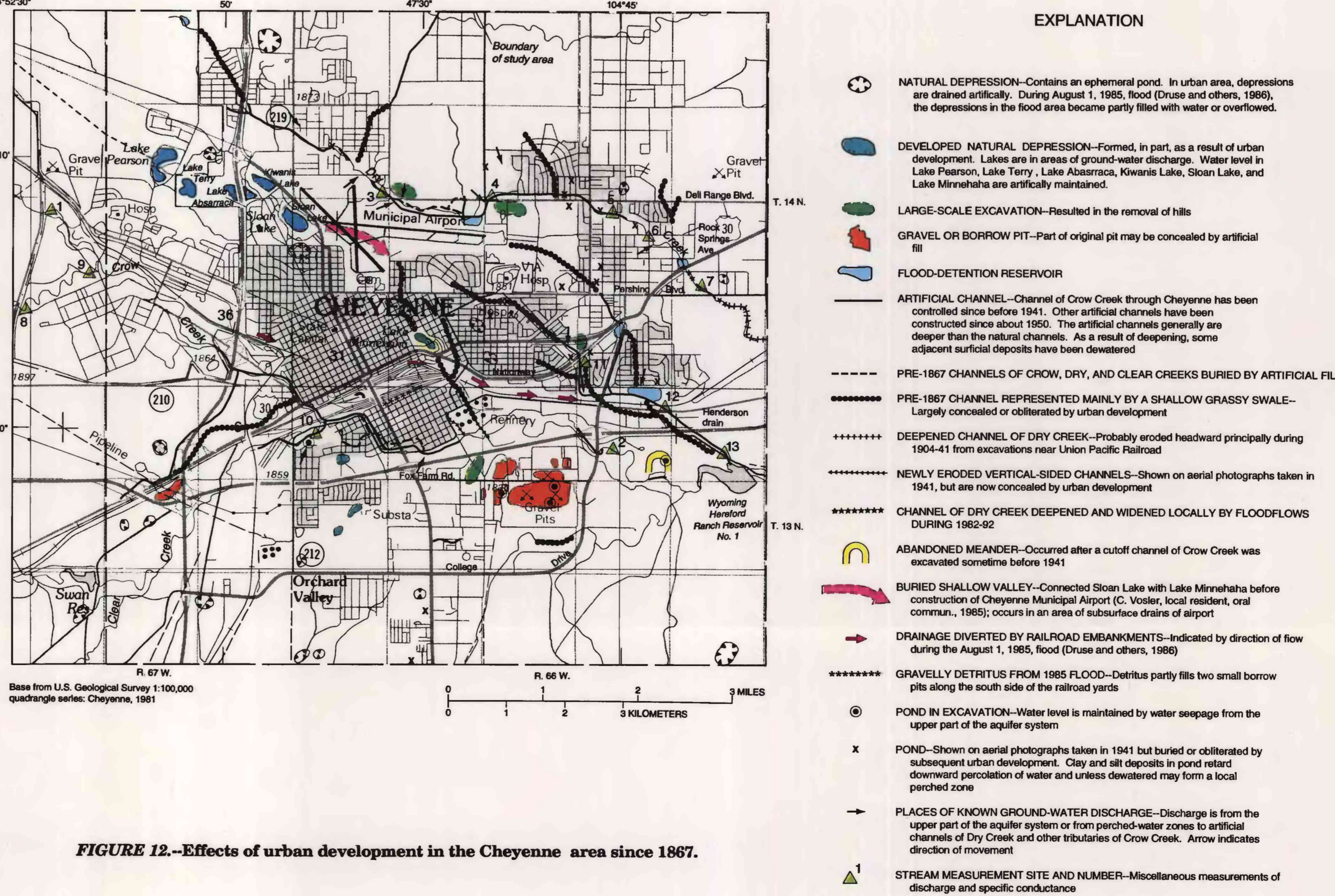


FIGURE 12.—Effects of urban development in the Cheyenne area since 1867.

GEOHYDROLOGY OF THE HIGH PLAINS AQUIFER SYSTEM, CHEYENNE URBAN AREA, WYOMING

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